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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,563	09/27/2001	Muhammad Asif Khan	SETI-0001	5265

23550 7590 12/11/2002

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EXAMINER

PHAM, LONG

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 12/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/966,563

Applicant(s)

KHAN ET AL.

Examiner

Long Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 13-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims 1-12 in Paper No. 5 is acknowledged. The traversal is on the ground(s) that see the election. This is not found persuasive because the searches for the device and method inventions are not coextensive.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 3, 4, 5, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugawara et al. (US '292).

Sugawara et al. teach a method of producing nitride-based heterostructure devices comprising the steps of (see figure 1 and col. 3, line 60 to col. 4, line 55):

providing a substrate 101 of SiC;

applying a second layer of GaN 103 or 104; and

applying a quaternary layer 105 of AlInGaN over the second layer the substrate.

4. Claims 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugawara et al. (US '292).

Sugawara et al. teach a method of producing nitride-based heterostructure devices comprising the steps of (see figure 6 and col. 7, line 60 to col. 8, line 30):

providing a substrate 101 of sapphire;

applying a first layer of GaN 302 or 303;

applying a ternary layer 304 of AlGa_N over the first layer; and

applying a quaternary layer 105 of AlInGa_N over the ternary layer.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugawara et al. (US '292) as applied to claims 1, 2, 3, 4, 5, and 6 above, and further in view of the following remarks.

Sugawara et al. do not disclose the molar fraction of Al in the AlInGa_N layer as recited in present claim 7.

However, it would have been obvious to one of ordinary skill in the art of making semiconductor devices to determine the workable or optimal range for the molar fraction of Al in the AlInGa_N layer through routine experimentation and optimization to obtain optimal or desired device performance because the molar fraction of Al in the AlInGa_N layer is a result-effective variable and there is no

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evidence indicating that the molar fraction of Al in the AlInGaN layer is critical or produces any unexpected results and it has been held that it is not inventive to discover the optimum or workable ranges of a result-effective variable within given prior art conditions by routine experimentation. See MPEP 2144.05.

Sugawara et al. do not disclose the molar fraction of In in the AlInGaN layer as recited in present claim 8.

However, it would have been obvious to one of ordinary skill in the art of making semiconductor devices to determine the workable or optimal range for the molar fraction of In in the AlInGaN layer through routine experimentation and optimization to obtain optimal or desired device performance because the molar fraction of In in the AlInGaN layer is a result-effective variable and there is no evidence indicating that the molar fraction of In in the AlInGaN layer is critical or produces any unexpected results and it has been held that it is not inventive to discover the optimum or workable ranges of a result-effective variable within given prior art conditions by routine experimentation. See MPEP 2144.05.

7. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugawara et al. (US '292) as applied to claims 9 and 10 above, and further in view of the following remarks.

Sugawara et al. do not disclose the molar fraction of Al in the AlInGaN layer as recited in present claim 11.

However, it would have been obvious to one of ordinary skill in the art of making semiconductor devices to determine the workable or optimal range for the molar fraction of Al in the AlInGaN layer through routine experimentation and optimization to obtain optimal or desired device performance because the molar fraction of Al in the AlInGaN layer is a result-effective variable and there is no

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evidence indicating that the molar fraction of Al in the AlInGaN layer is critical or produces any unexpected results and it has been held that it is not inventive to discover the optimum or workable ranges of a result-effective variable within given prior art conditions by routine experimentation. See MPEP 2144.05.

Sugawara et al. do not disclose the molar fraction of In in the AlInGaN layer as recited in present claim 12.

However, it would have been obvious to one of ordinary skill in the art of making semiconductor devices to determine the workable or optimal range for the molar fraction of In in the AlInGaN layer through routine experimentation and optimization to obtain optimal or desired device performance because the molar fraction of In in the AlInGaN layer is a result-effective variable and there is no evidence indicating that the molar fraction of In in the AlInGaN layer is critical or produces any unexpected results and it has been held that it is not inventive to discover the optimum or workable ranges of a result-effective variable within given prior art conditions by routine experimentation. See MPEP 2144.05.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 703-308-1092. The examiner can normally be reached on M-F, 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-4082 for regular communications and 703-746-4082 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Long Pham

Primary Examiner

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L. P.

December 3, 2002